

Code No: **R31051**

R10

Set No. 1

III B.Tech I Semester Supplementary Examinations, May - 2018

COMPILER DESIGN

(Computer Science and Engineering)

Time: 3 hours

Max. Marks: 75

**Answer any FIVE Questions
All Questions carry equal marks**

- 1 Differentiate the following with respect to language processing system [5M]
 - a) Compilation and Interpretation. [5M]
 - b) Pass and Phase [5M]
 - c) Back End and Front End [5M]
- 2 a) What is lexical analysis? Explain various data structures used for lexical analysis. [8M]
b) Explain how Regular definitions are used for constructing Strings, Sequences, and Comments with an example. [7M]
- 3 a) Construct the predictive parse table for the given grammar. [8M]
 $E \rightarrow E+E, E \rightarrow E^*E, E \rightarrow (E)/id.$
b) Construct the recursive descent parser for any grammar and show how it is different from backtracking. [7M]
- 4 a) Check the validity of the input string “ $id+id*id$ ” by the SLR parser for the given grammar $E \rightarrow E+T/T, T \rightarrow T^*F/F, F \rightarrow (E)/id$ [10M]
b) Show that “bottom up parsing is using the rightmost derivation in reverse order”. What is the role of Shift reduce parser in it? Give example. [5M]
- 5 State and explain the rules used to construct the LR (1) items. And also construct the LALR parser for the given grammar [15M]
 $S \rightarrow S' | S' | S S S^* | (S) | x y$
- 6 a) With neat sketch explain the activities of caller and callee in stack allocation strategy with an example. What is the role of parameter passing in it? [8M]
b) Give the structure of symbol table. Explain how it is used by all phases of compiler. [7M]
- 7 a) What is local optimization? How it is performed with structure preserving transformations? Explain with example. [8M]
b) Identify the basic blocks and draw the flow graph for finding the sum of ‘n’ natural numbers program. [7M]
- 8 a) Write and explain simple code generation algorithms. Prove that it allocates the registers efficiently. [8M]
b) Why garbage collection is important for code optimization? Explain garbage collection by using reference counting. [7M]

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